Reviewer's report

Title: Feasibility of a new 2D-based method for myocardial velocity strain and strain rate quantification in a normal adult and paediatric population. Comparison with Tissue Doppler Imaging.

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Reviewer: Rosa Sicari

Reviewer's report:

In the present manuscript authors address a critical and important issue: The normality values of speckle tracking. They enrolled a population of normals at different ages, measured the velocity strains by a novel and recently patented software and compared it with the conventional TDI. The methodology is appropriate and the results are sound. Nonetheless authors should address a few critical issues:

1. TDI and derivatives and the new 2D speckle technologies suffer of an intrinsic limitation: we do not know in absolute terms what we measure and only comparison inside the same population can be made. This major limitation applies also to speckle tracking that, although with the important advantage of being angle independent, has entered the clinical practice long before its additional value has been demonstrated in several clinical conditions. Please address.

2. Authors try to overcome the lack of reference values by providing them in a normal population of healthy volunteers. Therefore, there is no need to validate their data with TDI. TDI cannot be considered a reference and the comparison makes the manuscript an agreement study. Please delete the data on TDI.

3. Authors should also change the title since this is not a feasibility study: healthy volunteers are easy to be assessed due to the good acoustic windows, especially in the subset of the paediatric population. However, the percentage of assessment in the short axis view is very low 70%. Please address. This reviewer would suggest the following title: A new 2D-based method for myocardial velocity strain and strain rate quantification in a normal adult and paediatric population: assessment of reference values.

4. One of the main limitation of the study is due the lack of intra- and inter-observer variability. Quantification methods are not totally operator independent and authors should try to overcome the limitation of the study.

5. The discussion section is too long and a little bit unfocused. Please clearly list advantages and limitations of the new software, the importance of having provided reference values for the paediatric population, its potential clinical use. Please also give us your view on the future of the technique and on the Doppler derived ones. It is conceivable that 2D technologies will replace completely the Doppler derived ones. It would also important to know their opinion on the real
need of phantom assessment of normal values.

6. Minor: It would very interesting if authors could provide comparison with MRI, even in a subset of subjects.

**Level of interest:** An article of importance in its field

**Quality of written English:** Needs some language corrections before being published

**Statistical review:** Yes, and I have assessed the statistics in my report.

**Declaration of competing interests:**

'I declare that I have no competing interests'